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3CR990 Family Server and Desktop Security NIC's

“Bringing Intelligence to the Edge
From the Server to the Desktop and Beyond”



3com

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BCG - Advanced/Server NIC's



3Com Intelligent NICs

“Path to the Future”



**Intelligent networking is not
new for 3Com.....**



3Com Server and Desktop NIC's 3C90x, 3C980, 3C985

3Com Intelligence at the edge

DynamicAccess™ Technology Software for Desktops, Workstations and Servers

- **Advanced Server features - for high availability, scalability and performance**
 - ✍ **Bi-directional Load Balancing**
 - ✍ **Resilient Server Links**
 - ✍ **Self-Healing Drivers**
 - ✍ **Hot Plug PCI**
 - ✍ **Traffic Prioritization (IEEE 802.1p)**
 - ✍ **Multiple VLAN Support (IEEE 802.1Q) up to 16 VLAN's per system**
- **DMI 2.0**
- **WFM 2.0**
- **Remote Wakeup (ACPI & 3-pin header)**
- **MBA (Managed Boot Agent)**
- **Application Response Time Monitoring (ARTM)**
- **RMON/RMON2**



What is new..... ?



***New* 3Com NIC's**

3CR990 Family of “Secure” Network Interface Cards

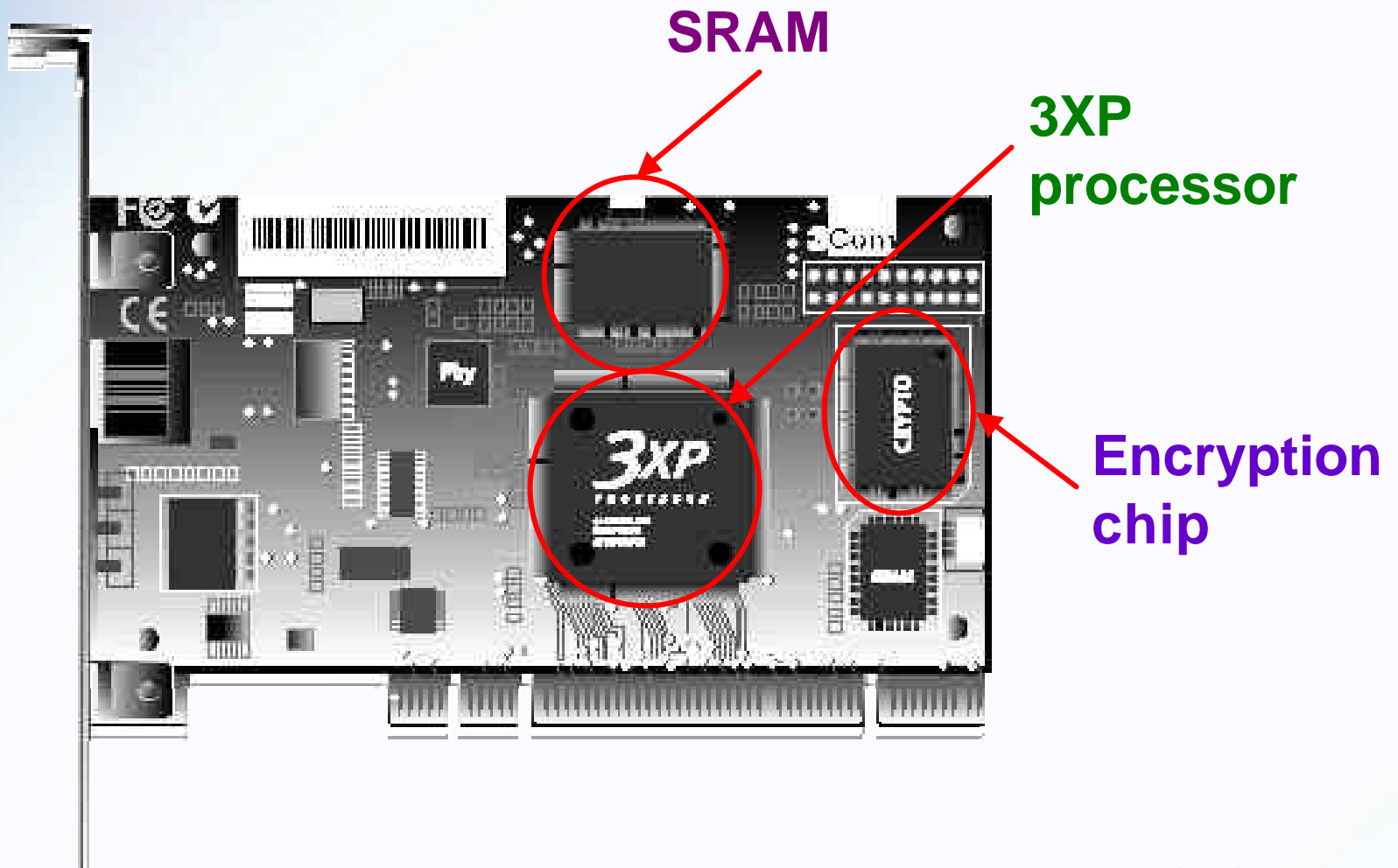
**EtherLink Server 3CR990 with 3XP Processor
(3CR990SVR95 & 3CR990SVR97)**

**EtherLink 3CR990 with 3XP Processor
(3CR990-TX-95 & 3CR990-TX-97)**



3Com Technology Leadership Continues

Intelligence resides on the NIC





3CR990 feature components

3XP Processor

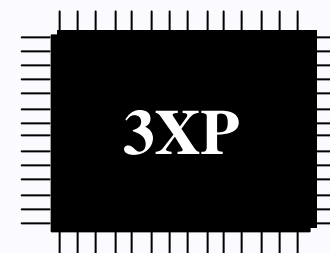
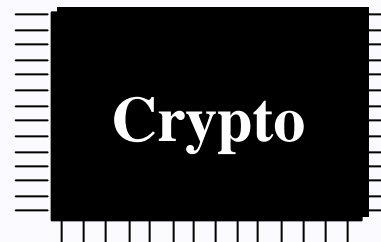
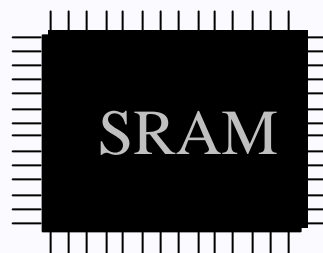
- Advanced RISC processor (ARM9 core) integrated with 3Com 10/100 controller

IP Security Encryption Chip

- On board, custom designed encryption chip providing hardware acceleration of IPSec encryption and authentication algorithms

SRAM memory chip

- External SRAM for Security Association storage & management, supporting up to 1024 SA offloads





Why 3CR990..... ?



3CR990 family of products does Intelligent co-processing

- ✍ Performs key TCP/IP processing tasks from Windows 2000 operating system
 - IPSec protocols
 - TCP Segmentation
 - TCP/IP checksum calculations
- ✍ Provides IPSec protocols for Win9X, NT4* operating systems
- ✍ Utilizes all standard 3Com management and server features in addition to co-processing
- ✍ Can be used as a platform architecture for future application designs



What is IPSec.....?



IPSec protocols

- **Standards-based security protocol for IP networks for encryption and authentication (DES, 3DES, SHA-1, MD5)**
- **Enables secure data transmission from desktop and server to network and remote users**
- **Encrypts plain text data using DES/3DES algorithm**

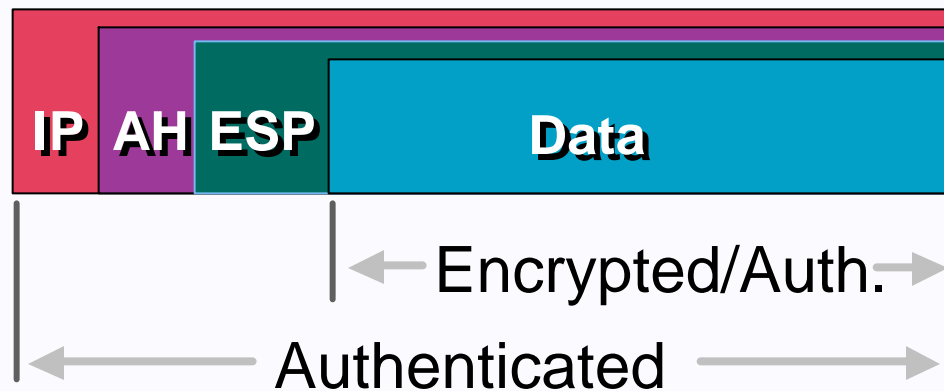
**Now is the time for all good people to come to the aid of
their country.....**

**!#@ %\$ &*% ~@\$@ ^^\$ @!! &%%# ^#^ (& (@^\$ %#
#\$% @#\$ %\$ *(&%#\$)\$#*%^@**



IP Security (IPSEC)

- ✍ Standards-based IP Security
 - Encryption (DES & 3DES)
 - Authentication/Integrity (SHA-1 & MD5)
- ✍ Two new headers
 - IPSEC headers are Inserted after the IP header
 - AH (Authentication Header) - optional
 - ESP (Encapsulating Security Payload)





IP Security (IPSEC)

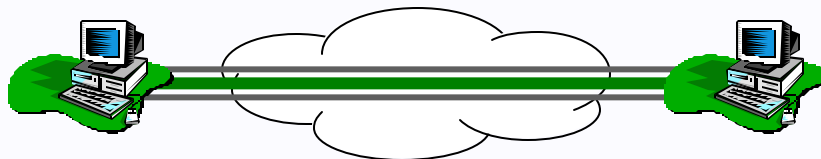
Two Modes of operation

— Transport mode

- Encrypt/Authenticates IP data from Host to Host
- NO tunnelling - ONLY Encryption/Authentication
- Used to Secure L2TP/PPTP tunnels

— Tunnel Mode

- Tunnel IP network (gateway to gateway)
- Encrypts/Authenticates the tunnelled IP packet
- Hides originating IP address





Why IPSec..... ?



Distributed Network Intelligence

Network Security requirements

Confidentiality

- Keep data private

Integrity

- Received = Sent

Authenticity

- No impersonation allowed

Other Security Requirements:

- Replay Prevention
- Denial-of-Service attacks
- Authorization



The “Threats” to the Network

✍ What are you protecting?

- Secrecy
- Integrity
- Availability

✍ Network Intrusions

✍ Denial of Service (DoS) Attacks

- Prevents you from using your network

✍ Information Theft

- From within your company or outside

Theft of data can occur anywhere in your network



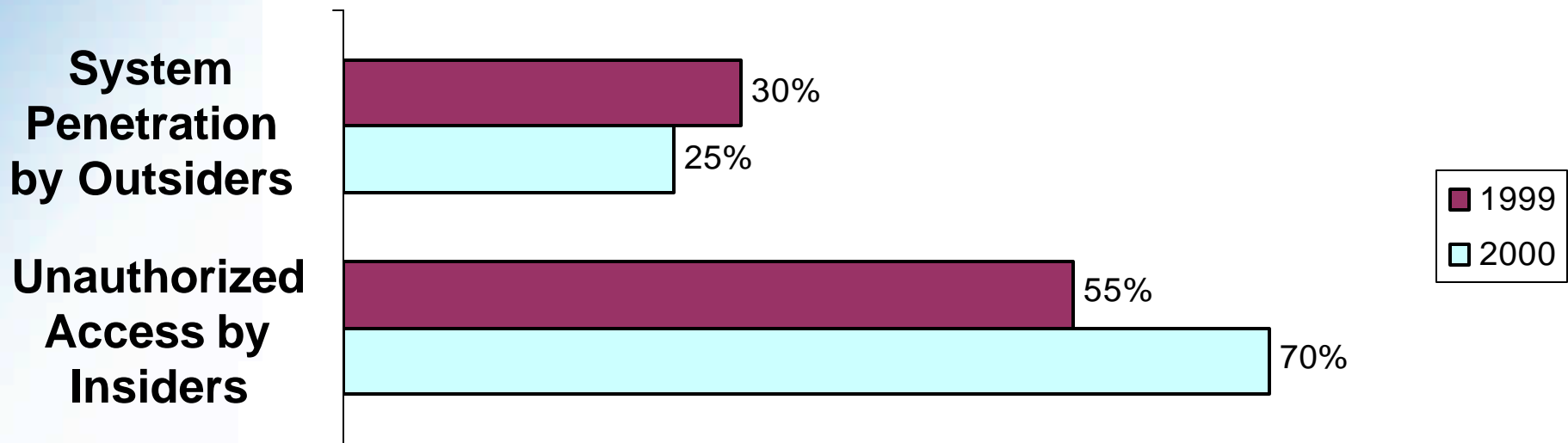
CSI/FBI* Surveys Indicate Security Breaches are Widespread

Computer Crime and Security Survey 2000

Joint CSI/FBI survey of 643 US organizations

93% with WWW sites

43% provide electronic commerce services



70%
Inside Jobs!

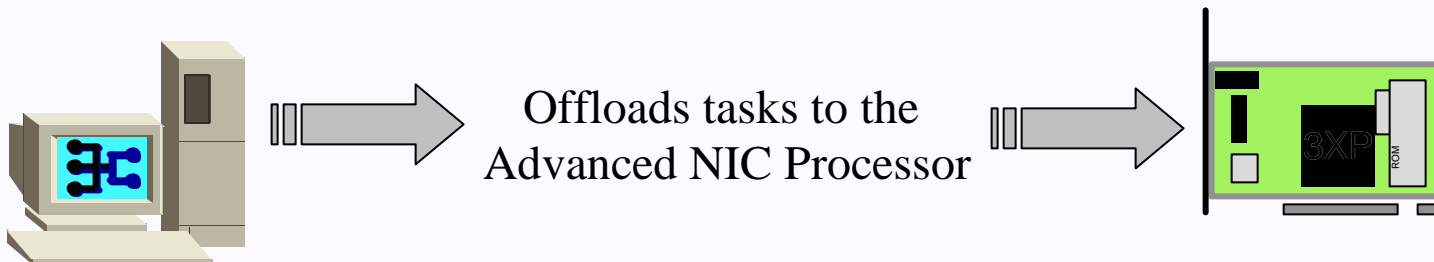


How does co-processing work and what are the benefits..... ?



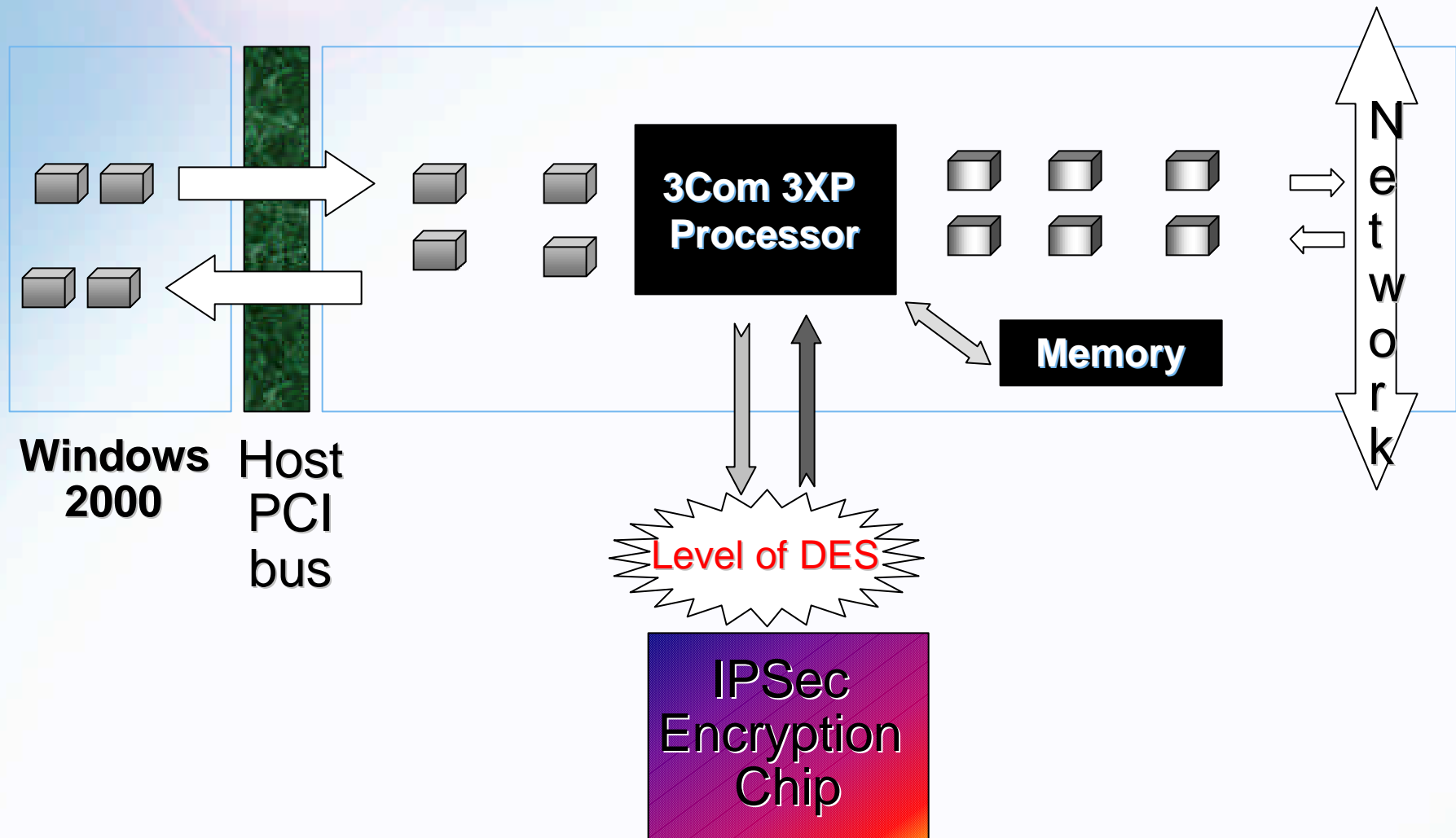
How is IPSec Acceleration Implemented?

- **Option 1: Software Based Encryption**
 - Windows 2000 handles encryption/decryption and management of security associations using the CPU
- **Option 2: Hardware Assisted Encryption**
 - Windows 2000 handles management of security associations using the CPU but offloads encryption/decryption to an ASIC on the NIC
- **Option 3: Full Hardware Encryption**
 - Both security association management and encryption/decryption processing are offloaded to the NIC





How Does IPSec Acceleration Work?

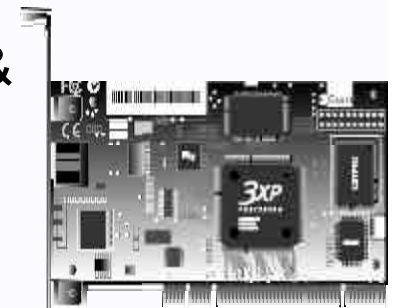




3CR990 “Secure” Network Interface Cards

Benefits of IP Security Encryption on the NIC

- Delivers true end-to-end security for the entire e-Network
- Accelerates IPSec encryption processing without sacrificing system or network performance
- Significantly reduces host CPU utilization
- Maintains near wire speed network throughput at 10/100 Mbps
- Provides standards-based IP LAN Security for securing sensitive data to and from the desktop and server(s)
- Interoperates with any core networking equipment
- Secures data to and from “always on” connections (DSL & Cable modems)
- Supports IPSec, L2TP and PPTP tunneling
- Delivers true end-to-end security for the entire e-Network



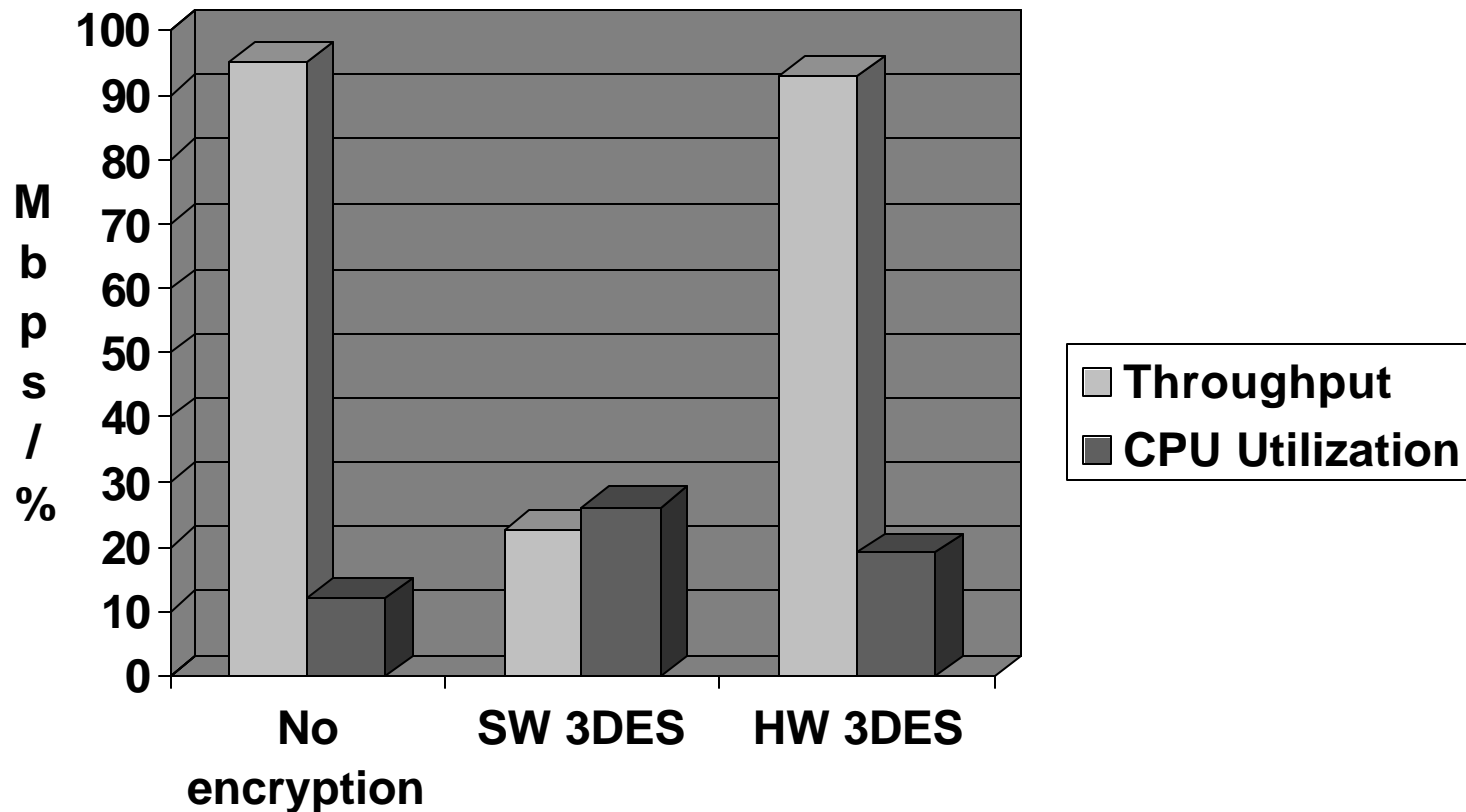


Implementing IPSec in Software is costly to productivity

P/E 7.94

P/E 0.87

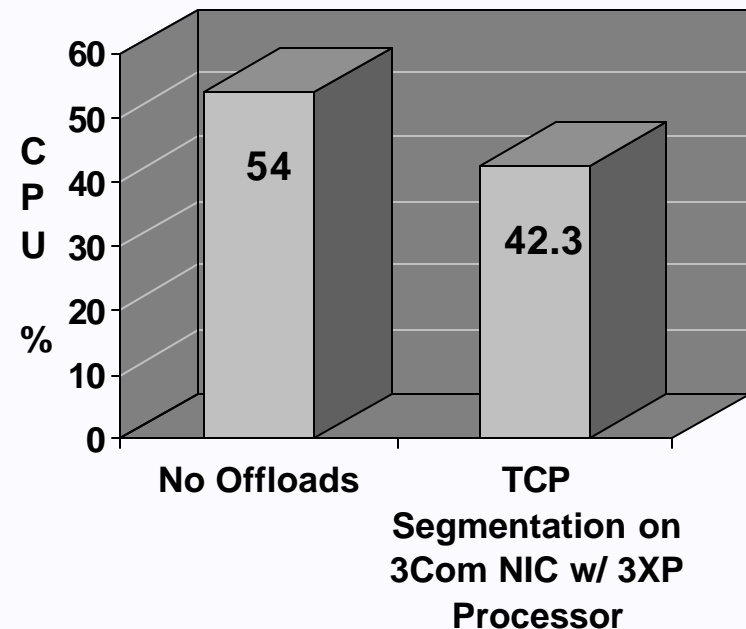
P/E 4.89





3Com's Performance Advantage

- **3XP Processor**
- **Crypto Chip for DES/3DES Encryption**
- **Client NIC has 7 times on-board memory**
 - 3Com 128KB vs Intel 18KB
- **Server NIC has 21 times on-board memory**
 - 3Com 384KB vs Intel 18KB
- **Segmentation Offload**
 - Intel has no support





What is the future of “Intelligent” NIC’s..... ?



Future for Intelligence

- ✍ Maintain a “platform” to build applications
- ✍ Invite third party vendors to develop
- ✍ Explore technologies such as:
 - VOIP
 - SSL acceleration
 - firewall
 - suggestions?



Development Platform

3Com Technology Leadership

Technology Leverage

Feature rich connections

Development Partnerships

-  **TCP/IP hardware acceleration**
-  **IPSEC encryption acceleration**
-  **Desktop and server management**
-  **Hardware development platform**

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